Sinergex™

PureSine 150/300
Pure Sine Wave Inverter
User's Manual

1. Important Safety Instructions

WARNING!

Before you install and use your Inverter, please read and follow these safety instructions.

1-1. General Safety Precautions

1-1-1. Do not expose the Inverter to rain, snow, spray, bilge or dust. To reduce risk of hazard, do not obstruct the ventilation openings. Do not install the Inverter in a zero-clearance compartment as overheating may result.

1-1-2. To avoid the risk of fire and electric shock ensure all wiring and and cables are in good electrical conditions and of sufficient size. Do not operate the Inverter with damaged or substandard wiring.

1-1-3. The PS-150/300 contains components which can produce arcs or sparks. To prevent fire or explosion, do not install or use in compartments containing batteries, flammable materials or in locations that require ignition protected equipment. This includes any space containing gasoline-powered machinery, fuel tanks, joints, fittings, or other connections or components of any fuel system.

1-2. Precautions When Working with Batteries

1-2-1. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eyes, immediately flood eyes with running cold water for at least 20 minutes and get immediate medical attention.

1-2-2. Never smoke or allow a spark or flame in the vicinity of the battery or engine.

1-2-3. Do not drop any metal tools or equipment on the battery. Doing so may result in sparking or the short circuit of the battery or possible explosion.

1-2-4. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery.
A lead-acid battery can produces a short-circuit current high enough to weld a ring or the like to metal, causing severe burns.

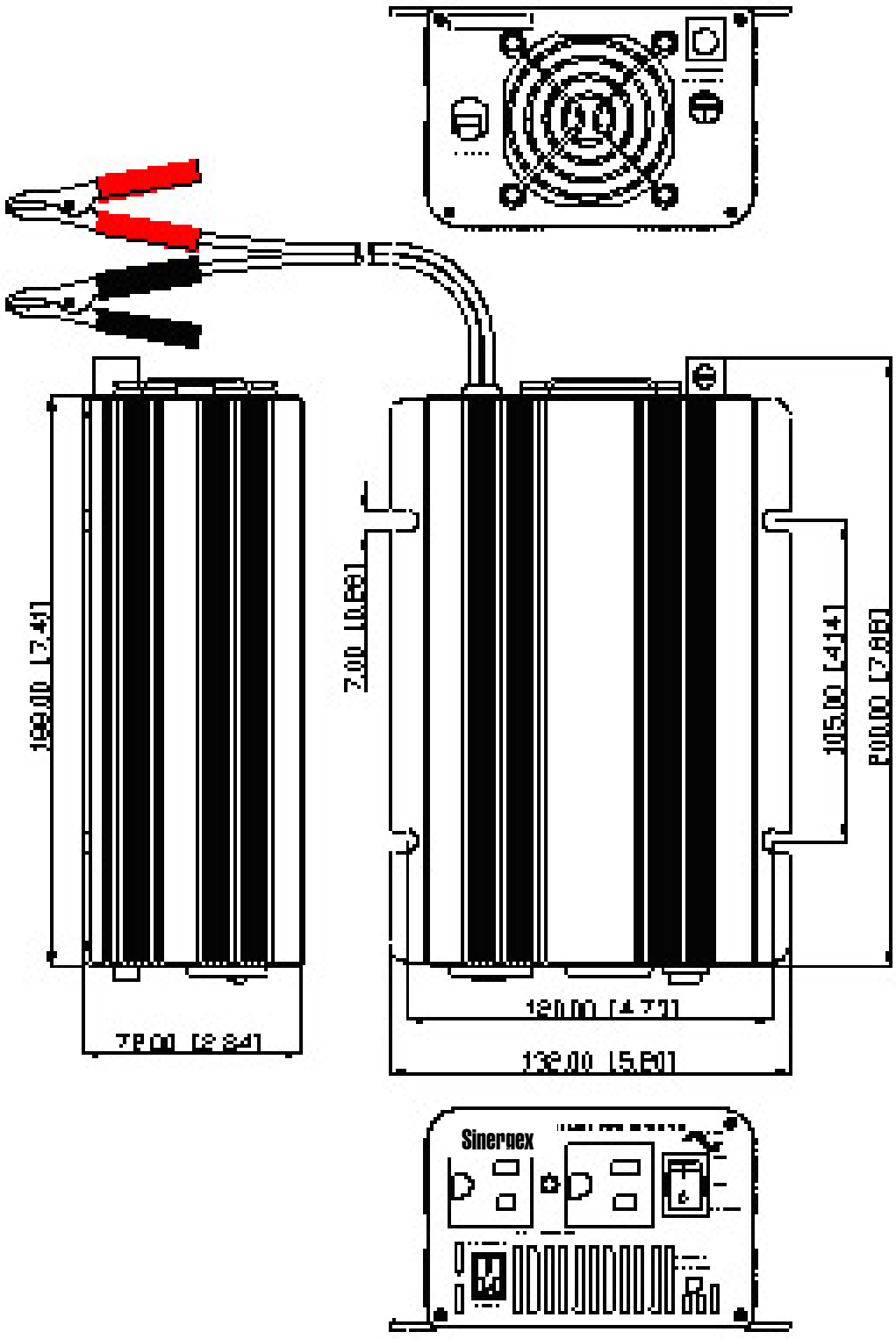
2.Features

2-1. Electrical Performance

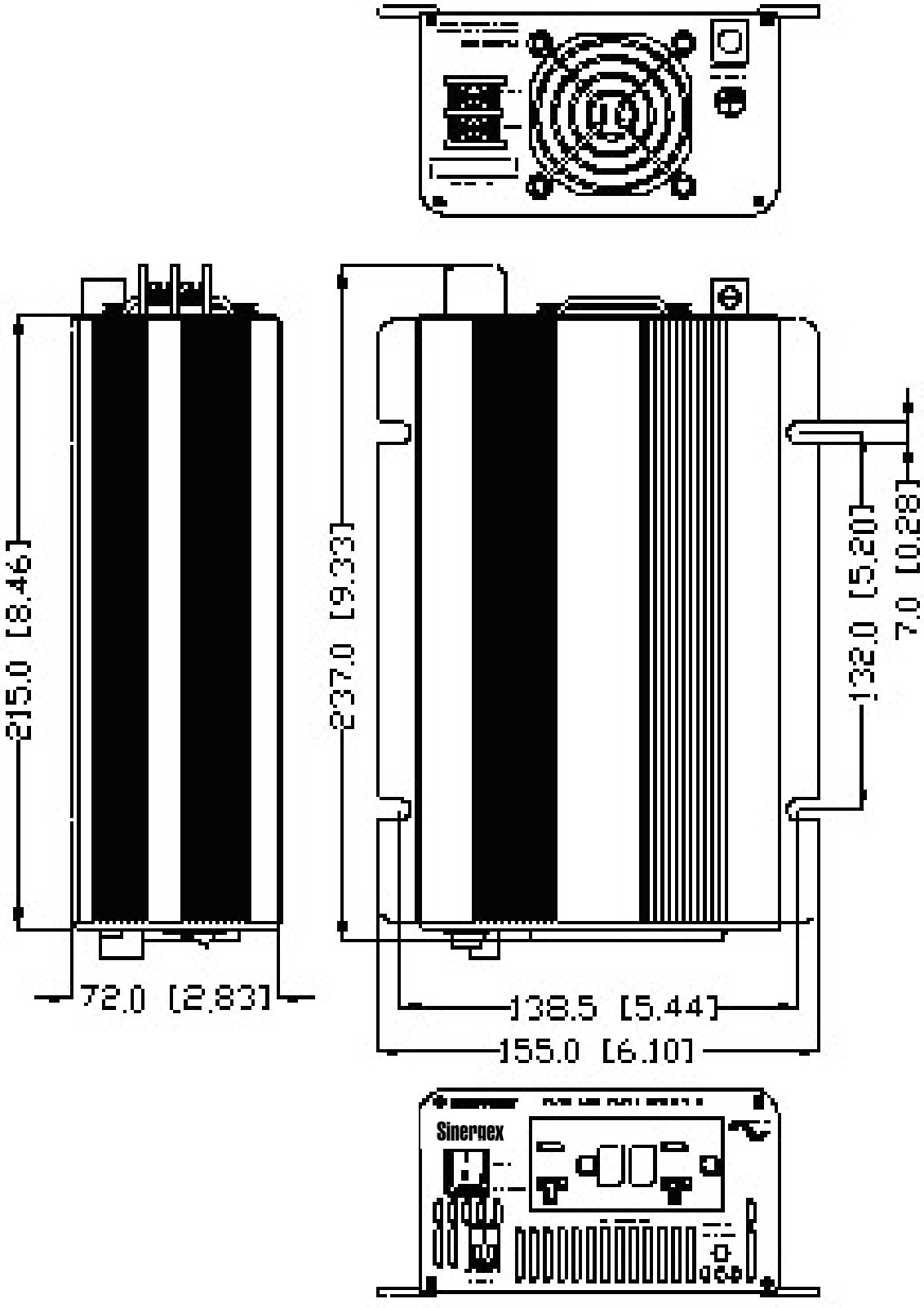
Specification	Model No.							
Item	S150 - XXX				S300 - XXX			
	112	124	212	224	112	124	212	224
Continuous Output Power	150W				300W			
Surge Rating	300W				500W			
Input voltage	12V	24V	12V	24V	12V	24V	12V	24V
Input Voltage Range	10.5 – 15.0	21.0 – 30.0	10.5 – 15.0	21.0 – 30.0	10.5 – 15.0	21.0 – 30.0	10.5 – 15.0	21.0 – 30.0
Output Voltage	110 VAC ±5%		230 VAC ±5%		110 V VAC ±5%		230 VAC ±5%	
Frequency	50 / 60Hz ± 0.05%							
Efficiency (Peak Load)	91%	92%	90%	93%	92%	93%	91%	94%
Efficiency (Max. / Avg.)	86%	87%	85%	88%	87%	88%	86%	89%
Efficiency (Full Load)	72%	79%	72%	80%	72%	78%	72%	80%
No Load Current Draw	0.18A	0.15A	0.22A	0.16A	0.26A	0.23A	0.23A	0.15A
Output Waveform	Pure Sine Wave (THD < 4%)							
Power Factor Allowed	cosθ-90° ~ cosθ+90°							
Protection	Overload, Short Circuit, Reverse Polarity (Fuse), Over / Under Input Voltage, Over Temperature.							
Remote Control	Yes, On/Off controlled by external switch							
Safety*	UL458 EN60950							
EMC**	FCC Class B EN50081-1□1992 EN50082-1□1992 EN55022B□1994 EN61000-4-2□1995 EN61000-4-3□1996 ENV50204□1995							
Operating Temperature	0* – 40* C							
Storage Temperature	-30* to 70* C							
Fan Cooling	Thermostatically controlled							
Dimensions (L x W x H)	200 x 132 x 72 mm 7.87 x 5.20 x 2.83 inch				237 x 155 x 72 mm 9.33 x 6.10 x 2.83 inch			
Weight	2.7 Kgs. / 5.4 Lbs.				3.5 Kgs. / 7.7 Lbs.			

*110V mode design meets UL 458 & FCC Class B. **230V model design meets CE & “e “ Mark. (Currently, all applied projects are pending)

2-2. Mechanical Drawing (PS-150)



2-3. Mechanical Drawing (PS-300)



3. Introduction

The Sinergex PureSine series are of the most, reliable, and high performing true sine wave inverters available. The PureSine inverters can be used in wide range of applications including portable office equipment, home entertainment products, computers and most AC powered products within each models size capabilities.

To ensure maximum performance from your Sinergex PureSine inverter it must be installed and used correctly **Please carefully read and follow the instructions in this manual before installation and operation of your inverter.**

3-1. Front Panel Operations

3-1-1. ON / OFF/ REMOTE switch

Leave the Power ON / OFF / REMOTE switch in the OFF position during installation.

3-1-2 LED display indicates Power Status

LED	Conditions	Status
Solid Green	———	AC Power OK
Blinked Red fast	- - - - - - - - -	OVP
Blinked Red slowly	— — — —	UVP
Blinked Red intermittently	– – – – – –	OTP
Solid Red	———	OLP

3-1-3. Remote Port: Placing 0.75mm^2 and Screw type wiring connecting the remote Port and remote panel.

3-2. Rear Panel Operations

3-2-1. Ventilation window: Do not obstruct. Allow at least 3 inches of clearance for airflow.

3-2-2. Input terminals: Connect 12V / 24V batteries or other 12V / 24V power sources. Red is positive, Black is negative. Reverse polarity connection will blow internal fuse and may damage inverter permanently and void warranty.

3-2-3. Using # 8 AWG wire connects Chassis ground and Vehicle Chassis.

WARNING!

Do not connect the 12V model to a 24V battery; the unit will be destroyed immediately.

Operation of the inverter without a proper ground connection may result an electrical safety hazard.

Damage caused by reversed polarity is not covered by warranty. Make sure the power switch is in the OFF position before connecting to the battery.

3-3. AC Safety Grounding:

During the AC wiring installation, AC input and output ground wires are connected to the inverter. The AC input ground wire must connect to the incoming ground of your AC utility source.
The AC output ground wire should go to the grounding point for your loads (for example, a distribution panel ground bus).

3-3-1. Neutral Grounding (GFCI'S):

110V models: The neutral conductor of the AC output circuit of the Inverter is automatically connected to the safety ground during inverter operation. This conforms to National Electrical Code requirements that separately derived AC sources (such as inverter and generators) have their neutral conductors tied to ground in the same way that the neutral conductor from the utility is tied to ground at the AC breaker panel. For models configured with a transfer relay, while AC utility power is presenting and the inverter is in bypass mode, this connection (neutral of the Inverter's AC output to input safety ground) is not present so that the utility neutral is only connected to ground at your breaker panel, as required. Sinergex has tested the following GFCI – protected 20A receptacles and found that they functioned properly when connected to the output of the Inverter

WARNING!

Never connect the inverter's output to the AC distribution grid, such as your household AC wall outlet.

Doing so will damage the Inverter and void warranty.

3-4. Installation

Before connecting your applications to the inverter, always check the power draw of your appliances. The inverter will supply a greater surge power for a short time to start electrical equipment such as electric motors, pumps etc., that require more power while starting up.

When all the above requirements are satisfied and all connections are made, it's the time to turn on your inverter by pushing the power switch to the ' I ' position. The sine wave output AC voltage gently rises from AC outlet.

When the inverter is not supplying power to an application for a prolonged period of time, it's recommended to turn off the inverter to save your batteries, since the inverter still draws a very small amount of current when there is no load connected.

DC input voltage status as follows:

Model	DC Input over Voltage		DC Input under Voltage	
	Shut-down	Restart	Shut-down	Restart
12V models	15.3	14.8	10.5	12.5
24V models	30.6	29.6	21.0	25.0

4. Troubleshooting guide:

WARNING!

Do not open or disassemble the inverter. Attempting to service the unit yourself may result in a risk of electrical shock or fire and void warranty.

Problems and Symptoms	Possible Cause	Solutions
No output voltage, the LED glows RED light.		
a. Power status light blinks RED fast.	Over input voltage.	Check input voltage. Reduce input voltage.
b. Power status light blinks RED slowly.	Low input voltage.	Recharge battery. Check connections and cable.
c. Power status light is blinks RED intermittently.	Thermal shutdown	Improve ventilation. Make sure inverter's vents are not obstructed. Reduce ambient temperature.
d. Power status light glow steady RED.	Short circuit, Wiring error. Over Load	Check AC wiring for short circuit. Remove load.